



Water for a Healthy Country

Taxon Attribute Profiles *Acacia stenophylla* A.Cunn. ex Benth.

Eumong, River Cooba

Introduction

Acacia stenophylla is a common component of watercourse-fringing vegetation in inland arid areas of eastern Australia. A small tree with a somewhat weeping habit it is tolerant of saline, alkaline and waterlogged soils and survives periodic flooding.

Taxonomy and Ecology

Classification

Family: *Mimosaceae*

Genus: *Acacia* – c. 1200 species worldwide, approximately 900 of these endemic to Australia.

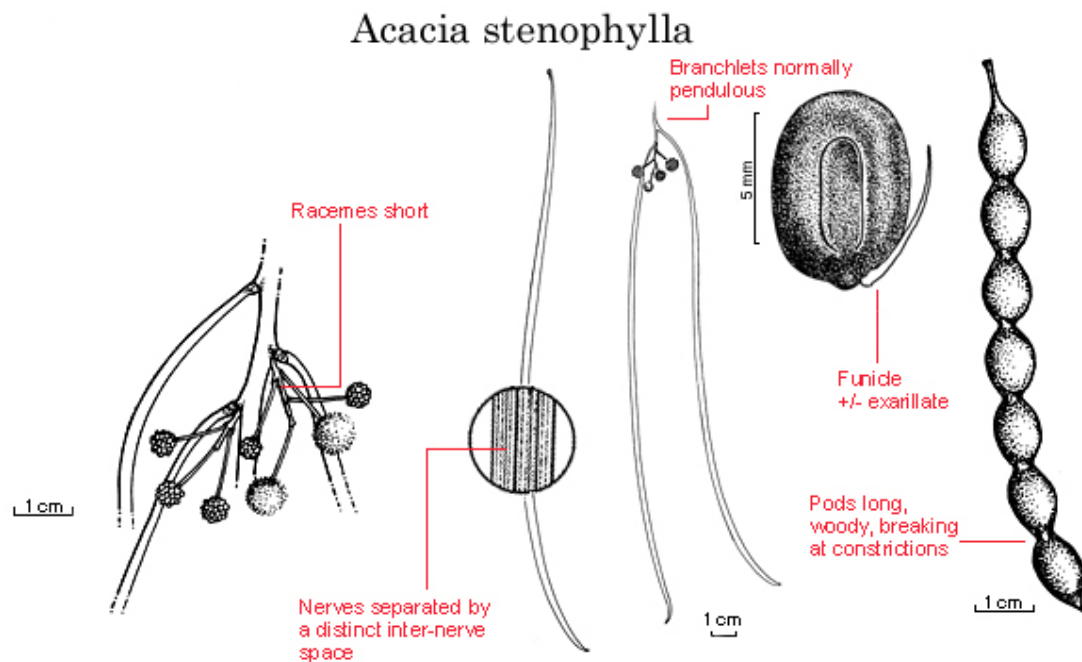
Notes: For recent taxonomic descriptions of *Acacia stenophylla* see Maslin (2001) and Cowan and Maslin (2001).



Acacia stenophylla
Currawinya National Park (M.Fagg 1992)

Life form

Acacia stenophylla is an erect or spreading shrub or small tree to 20 m tall with a rounded crown. It varies in form over its distribution but is usually single stemmed (Boxshall and Jenkyn, 2001) with pendulous branchlets. *Acacia stenophylla* generally lives for more than 50 years (Thomson, 1987). See Marcar *et al.* (1995); Cowan (1996); Cowan and Maslin (2001); Kodela and Harden (2002) for further descriptive information.

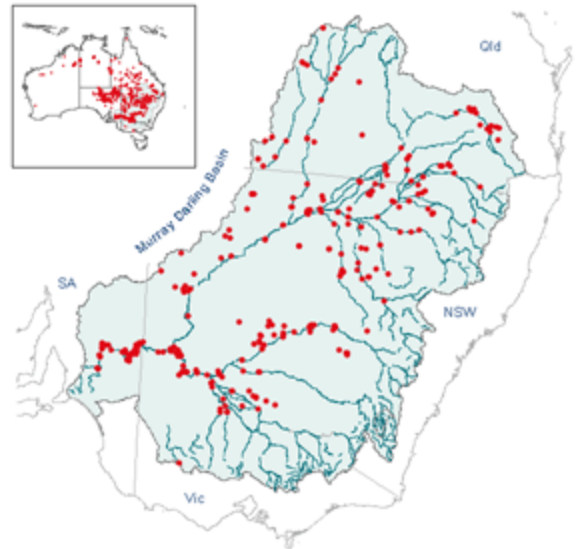


Illustrated by M. Pieroni and J. Rainbird

(ex Maslin, 2001)

Distribution

Acacia stenophylla is very widely distributed in inland arid areas from north-eastern Western Australia, east through Northern Territory to Queensland (west of the Great Divide) and south to the Murray-Lachlan-Darling River system in New South Wales, Victoria and South Australia, disjunct in SA between Lake Eyre and Murray River (Cowan and Maslin, 2001). It grows in ribbon-like stands along watercourses and as a component of eucalypt woodland or forest close to rivers (CAB International, 2000).



Habitat

Acacia stenophylla usually grows in heavy soils on plains and gentle slopes adjoining flood zones, depressions and watercourses (Boxshall and Jenkyn, 2001), or along watercourses subject to periodic flooding (Cowan and Maslin, 2001). Soils are mainly fine-textured alluvials, grey cracking clays and red sandy clays, typically with a neutral to alkaline pH. Soils may also be saline and subject to extended periods of waterlogging (Marcar *et al.*, 1995).

Map showing distribution within Australia as well as in the Murray Darling Basin.



Acacia stenophylla (shrub left) with lignum on edge of Dynevor Lakes near Thargomindah. (R.Purdie 1984)



Acacia stenophylla with *Myoporum acuminatum* near Dynevor Lakes near Thargomindah. (R.Purdie 1984)

"Status" in community

Acacia stenophylla is a dominant small tree of watercourses in the Murray-Darling Basin. *Acacia stenophylla* woodland occurs patchily through the western part of the Basin, for example, on the Chowilla floodplain, the lower Lachlan river valley, the Gwydir floodplain and on the Paroo system (Roberts and Marston, 2000). It frequently forms monospecific stands (Cowan and Maslin, 2001).

Associated species

Acacia stenophylla is usually a component of open-forest, woodland or low woodland dominated by eucalypts (Marcar, 1995), often occurring in narrow stands flanked by *Eucalyptus camaldulensis* (Boxshall and Jenkyn, 2001). *Acacia salicina* and *A. pendula* may also occur in association (Boxshall and Jenkyn, 2001). Other recorded vegetation communities for *Acacia stenophylla* include *Astrebla* sp. grasslands and *Casuarina cristata*, *Eucalyptus largiflorens*, *E. microtheca* and *E. populnea* communities (Cunningham *et al.*, 1981). *Acacia stenophylla* is also recorded in association with a chenopodiaceous ground layer (Australian National Herbarium, Canberra, 2004).

Acacia stenophylla tall shrubland is one of the main vegetation communities in the Chowilla floodplain (Sharley and Huggan, 1995).



Acacia stenophylla (with mistletoe *Lysiana exocarpi*) and *Muehlenbeckia florulenta* at Purda Billabong, near Wentworth, NSW.
(Photo: J. Roberts, 2002)

Qualitative and quantitative data – abundance, cover, biomass

No specific data is readily available relating to cover, abundance or biomass. As noted above, *A. stenophylla* can be a dominant small tree on the edge of watercourses and is often found in monospecific stands.

Species – interactions with other biodiversity

As a legume, *Acacia stenophylla* has a symbiotic association with rhizobia enhancing nitrogen fixation (see Dispersability below).

Acacia stenophylla is recorded as a host for the mistletoes *Lysiana exocarpi* and *Amyema preissii* (Whibley and Symon, 1992; Australian National Herbarium, Canberra, 2004).

Bag shelter moth and webbing caterpillars are minor pests. The seeds are often subject to attack by borers which drill through the pods (Boxshall and Jenkyn, 2001). Susceptibility of foliage and stems to insect damage is considered low (Marcar *et al.*, 1995).

Physiological traits and adaptations

Acacia stenophylla is well adapted to saline and alkaline soils. It is highly tolerant of waterlogging, enabling it to survive in areas where flooding occurs, such as beside watercourses and on floodplains (Marcar *et al.*, 1995).

Reproduction and Establishment

Reproduction

Acacia stenophylla generally flowers from March to August (Kodela and Harden, 2002). However, it can flower irregularly throughout the year (Cowan, 1996; Whibley, 1986). Pods become woody as they mature from October to December, producing approximately 6-12 viable seeds/g (Marcar, 1995). Number of viable seeds per unit weight of a seedlot has been recorded as 12-25,000/kg (Harwood, Aspects of Species and Provenance Selection).

Dispersability; establishment and growth

Seeds germinate prolifically (Lithgow, 1997). After major floods seedlings may be abundant along the flood-line but only a very small proportion of these persist (Cunningham *et al.*, 1981).

Acacia stenophylla displays moderate to fast growth. It may sucker on extremely poor sites or if the roots are damaged. It will coppice when young or in favourable conditions (Boxshall and Jenkyn, 2001).

Acacia stenophylla, like most other native Australian shrubby legumes, is known to form symbiotic associations with root-nodule forming bacteria in the genus *Bradyrhizobium* (pers. comm., P.H. Thrall, 2004). The nitrogen-fixing capabilities of this species, together with its high level of salt-tolerance makes it an important species for restoration and revegetation of riverine and floodplain habitats. In particular, the added nitrogen inputs to the soil provided by *A. stenophylla* are beneficial to other non-legume plants in the community. Planting in conjunction with acacias has been demonstrated to significantly increase growth of these species as well (Bagnall *et al.*, 2004).

Juvenile period

Acacia stenophylla is a fast growing species and only requires three to four months under nursery conditions to reach a plantable size (CAB International, 2000).

Hydrology and salinity

Hydrology

Acacia stenophylla tolerates drought and periodic waterlogging and flooding (Marcar *et al.*, 1995). It performs well on sites with shallow water tables (Boxshall and Jenkyn, 2001), however, it is only moderately drought tolerant in cultivation (CAB International, 2000).

Salinity tolerance

This wattle is adapted to saline, heavy clay soils in arid and semi-arid areas where supplementary groundwater is available. Expect reduced growth at EC_e ca. 10-15 dS/m and reduced survival at ca. 15-20 dS/m (Marcar *et al.*, 1995). *Acacia stenophylla* has displayed both higher survival rates and grown taller under saline conditions than non-saline conditions, though this is dependent on provenance (Marcar *et al.*, 1998). It is also tolerant of alkaline soils (Marcar *et al.*, 1995).



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Flooding regimes

Change in water regimes

Altered flood regimes, irrigation development and agricultural practices have greatly reduced and fragmented the distribution of *A. stenophylla* (Boxshall and Jenkyn, 2001).

Response to disturbance (non-hydrological)

Grazing

Acacia stenophylla is rarely utilised by stock, although reported to be good sheep fodder (Cunningham *et al.*, 1981). It has good resistance to debarking by stock (Boxshall and Jenkyn, 2001).

Weeds

Acacia stenophylla is considered a woody weed in parts of north-western Queensland (CAB International, 2000).

Conservation status

Acacia stenophylla is a widespread tree species across Australia, and is not considered to be at risk.

Uses (including ethnobotanical)

Pods were roasted in a fire, and the seeds, which are relatively large and nourishing, were eaten by Aboriginals in northern NSW. The wood is likely to have been used for clubs and boomerangs (Boxshall and Jenkyn, 2001). Wood of *Acacia stenophylla* is suitable for firewood, fenceposts and furniture, and the tree itself is suitable for windbreaks, shelter, shade, mine-site rehabilitation, soil stabilisation, ornamental purposes, and food production (edible seeds and pods) (Marcar, 1995). It is grown in the USA in garden plantings, particularly in southern desert regions (Arid Zone Trees, 1997-2004). It has the potential to be grown in agroforestry combinations with pastures. While it has not been widely introduced into any other countries, growth trials have been conducted in India, Pakistan, Indonesia, the Philippines and Kenya (CAB International, 2000).

Acacia stenophylla is currently little used as a timber species, but is considered to have great potential in the craftwood and specialty timber markets. The Victorian Department of Natural Resources and Environment (now the Department of Primary Industries) has been encouraging its increased use as part of the response to salinity on riverine plains and the establishment of plantations in order to develop an adequate supply of high quality timber (Boxshall and Jenkyn, 2001).

Summary

Along with *Eucalyptus camaldulensis*, *Acacia stenophylla* is one of the few species from the Murray-Darling Basin for which any significant amount of data is available. *Acacia stenophylla* is a widespread species which is closely linked to present drainage patterns in the drier parts of inland eastern Australia. It is relatively hardy, being able to cope with waterlogging and high levels of salinity, and also displays a number of desirable characteristics from a revegetation/rehabilitation viewpoint (i.e. high seed production, prolific germination, fast growth, ability to sucker and nitrogen fixing capabilities). It also shows considerable promise as a commercial tree for agroforestry, in terms of (specialised) timber and food production.

Even under the currently unfavourable conditions prevailing in the Murray-Darling Basin, *Acacia stenophylla* appears to be able to survive and reproduce satisfactorily, and it should be considered seriously as a species for rehabilitation of degraded sites in this area.

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